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THE CANADIAN EXPERIENCE WITH RECALL AND DIARY METHODS IN CONSUMER EXPENDITURE SURVEYS

BY ISABEL McWHINNEY AND HAROLD E. CHAMPION

In the twenty years since 1953, when the continuing series of Canadian small-scale surveys of consumer expenditure was first initiated, ten survey programs have been completed, five of which involved the complementary use of recall and diary methods. Several innovations in methodology and design were introduced on a trial basis in particular surveys and thus contributed to the evolution, over the period, of the current approach. This article discusses this experimental work, on a comprehensive basis, for the first time.

1. INTRODUCTION

Canadian experience in the complementary use of the recall and diary methods for the collection of consumer expenditure information extends back to the first expenditure survey of 1938. This paper presents in Section 2 a resumé of early experimental work and other findings in the period 1953 to 1962, and examines in Section 3 results from the national survey program of 1969-70. Section 4 deals briefly with recent activities in 1971 and 1972, followed in Section 5 by a summary and conclusions.

In Canada, as in other countries, the primary stimulus and the budgetary justification for carrying out these difficult and expensive surveys have been the data needs of the Consumer Price Index. For this reason, the collection of accurate and detailed information on food purchases has been a central aim of Canadian surveys, and some form of food diary has been used in every survey in which food detail has been sought. The restriction of the diary to the collection of food expenditures was primarily a cost consideration. An annual recall survey requires a major effort on the part of the field organization for a relatively short time, whereas continuing diary surveys for the whole budget require much larger samples and control of field operations over the whole year. Furthermore, it was considered that for price index weights the recall method provides a sufficiently accurate distribution of family expenditures. Over the past two decades, other needs and uses have become increasingly important and have posed more searching questions concerning the reliability of the data.

The first major Canadian survey, in 1948-49, was national in scope, and referred to Canadian non-institutional population, urban, rural non-farm and farm. The recall portion of the survey was designed to be self-enumerated with some assistance from interviewers, but there turned out to be serious problems with both the level and quality of response. The food diary portion of the survey covered four two-week periods at approximately quarterly intervals in 1948-49, all of them outside the period covered by the recall survey.

Experience in 1948 high-lighted the desirability of a continuing program of expenditure surveys, not only for the purpose of up-dating the expenditure patterns used in price index weights, but also to accumulate experience in expenditure survey problems and methods. Accordingly in 1951 a section was set up in the

Dominion Bureau of Statistics (Statistics Canada) for the development of small-scale urban expenditure surveys.

In 1951-52 developmental work was done in the newly formed expenditure section in schedule and diary design and survey procedures, and also in testing alternative methods of both diary and recall. Commencing in 1953, a series of small-scale surveys was begun. The general pattern followed in 1953, 1955, 1957 and 1962 was a biennial program, consisting of a year of survey activity in which monthly surveys were taken throughout the year, followed by a twelve-month recall survey taken early in the year following. (See Appendix I for an outline of the distinctive features of each survey program.) The remainder of the second year was devoted to processing, analysis, publication and preparation for the next round of surveys. A departure from this pattern was made in 1959, when the food expenditure surveys were omitted and all resources used to double the size of the recall survey. A return to the food diary was made in 1962, but the two following surveys again omitted the food diary surveys and covered the years 1964 and 1967 by recall only. In 1969, for the first time since 1948-49, a national food diary survey was conducted. This survey included, as well as food detail, information on other household supplies, namely cleaning supplies, paper products and food wraps, personal care supplies, cigarettes and tobacco, alcoholic beverages, pet foods, books, newspapers and magazines. This was followed by a national recall survey in 1970, referring to the total family budget for the year 1969. The comparison of diary and recall results in the 1969-70 program, in addition to being the most recent, is also a more varied one, and the sample sizes are large enough to lend a degree of stability to estimates for regional and other groups.

2. EXPERIENCE IN DIARY AND RECALL, 1953-1962

2.1. *The Survey Universe*

The universe of the surveys in 1953, 1955, 1957 and 1962 was subject to restrictions of family income and composition as well as geographic coverage, in order to sample a group comparable to that selected from the 1948 survey as the consumer price index "target group." The samples were limited to families of two to six persons, with a further restriction to eight specific family types, within income limits which were shifted upward from the 1947-48 range of \$1,650-\$4,050 in order to obtain a comparable income group. Census Metropolitan areas, ranging in number from five in 1953 to nine in 1957, were selected to represent urban families with these characteristics in cities with populations of 30,000 and over in the five main geographic regions of Canada. The restricted nature of the samples rendered them more homogeneous, but prevented comparisons of results with information from other sources. The family definition used was that of the "spending unit," defined as a group of persons living in the same dwelling and dependent on a common or pooled income for the major items of expense.

2.2. *Sampling and Field Operations*

The samples were selected within the framework of the Labour Force area sample and the surveys were carried out by the Regional Office of the bureau's

Field Division through which Labour Force surveys are administered. In the surveys from 1953 to 1962 selection was made by systematic sampling from lists of families compiled from Labour Force survey household record cards for households which had participated in the Labour Force survey approximately six months earlier. This made it possible to eliminate in advance households of one persons, or families not meeting family composition requirements. A further check on family composition was made in the field, at which time it was determined whether or not family income met the survey requirements. Field work was carried out under the direction of Regional Statistics Officers who selected interviewers from the most competent and experienced Labour Force interviewers and trained them according to head office instructions.

2.3. Test of Recall and Diary in 1953

The monthly surveys in 1953 began as a continuation of a pre-test in the last four months of 1952, which was designed to explore the relative advantages of diary and recall and to determine the optimum period for the collection of food expenditures. Over a nine-month period ending in May 1953, families were interviewed on the first visit concerning purchases in the previous week and then given a diary to be completed in the week following. From June to December of 1953 the recall schedule was discontinued and both survey weeks were covered by diary. Throughout the year, information on family composition and family income was collected on a separate schedule which also asked recall questions on shelter costs.

Results of the test were rendered somewhat ambiguous by the fact that each method referred to a different week. The timing of the surveys was determined by the monthly work pattern of the interviewers who were also employed on the labour force surveys. The starting date for field operations was the first Monday in each month, which meant that the recall period would usually include the first of the month. Expenditures for the first week (recall) were consistently higher than for the second week (diary), as shown in Table 1. It was concluded that part of the difference might be attributed to a first-of-the-month increase in food buying. This was given support by a study of weekly sales by a large number of food chain stores which showed that sales were generally higher in the first week of the month than in the second, although the differences were less than those shown by the expenditure data. It was assumed that the "real" expenditure difference between the first and second weeks could be estimated from results in the latter part of the year when the diary was used in both weeks. On the basis of this assumption the recall method was judged to give results not significantly different from the diary. Subsequent surveys have shown higher first-week purchases to be an inevitable feature of record-keeping, and this knowledge introduces other considerations into the foregoing reasoning. In the second half of the year, given the same starting date, the diary survey would cover a later week than the recall survey, and would not get the same impact of any first-of-the-month buying surge. Also, in the first five months, the second week, being the first diary week, would have been abnormal.

A supplementary survey was carried out in February 1953 in which the diary and recall schedule covered the same period. Of the four cities included, two

TABLE I
COMPARISON OF FIRST AND SECOND WEEK FOOD EXPENDITURES IN 1953

<i>January 1953-May 1953</i>			
	First Week (Recall)	Second Week (Diary)	Percentage First Week Higher
	\$	\$	
January	24.52	21.64	13.3
February	22.65	22.10	2.5
March	22.03	20.88	5.5
April	23.04	20.91	10.2
May	23.46	20.44	14.8
Average	23.14	21.19	9.2
<i>June 1953-December 1953</i>			
	First Week (Diary in both weeks)	Second Week (Diary in both weeks)	
June	23.73	21.85	8.6
July	23.52	21.10	11.5
August	23.92	22.75	5.1
September	22.53	21.04	7.1
October	23.54	21.21	11.0
November	21.25	20.01	6.2
December	23.77	21.91	8.5
Average	23.18	21.41	8.3

showed higher results for recall and two for the diary, but on average diary results were about 4 percent higher than recall.

Although differences in total food expenditure between the two methods were deemed to be not significant, it was decided that the diary method was preferable for collecting reliable detail. It was also decided that two weeks was the minimum period for which records should be kept, because of the difference between the first and successive weeks. The food chain store sales data indicated that an average of the first two weeks would provide a reasonably good estimate of total expenditure for the month. Also, on the basis of store sales data, it was decided that food surveys at less frequent than monthly intervals would not provide representative estimates for the year.

2.4. Differences in Expenditure between Weeks

The higher first-week diary expenditure has come to be accepted as a fact of life in record-keeping surveys. The surveys of 1953, 1957 and 1962 revealed some differing aspects of this problem.

From June to December 1953, when the diary method was used in both weeks, first-week expenditures averaged 8.3 percent above second-week expenditures. Table 2 shows dollar and percentage differences by commodity groups. In all cases the first-week expenditures exceeded those in the second week, with differences ranging from 1.6 percent for bakery products to 24.6 percent for cereals. Meals

TABLE 2
AVERAGE EXPENDITURE ON FOOD IN FIRST AND SECOND DIARY WEEKS
BY COMMODITY GROUP FOR THE PERIOD JUNE-DECEMBER, 1953

Commodity Groups	First Week	Second Week	Percentage First Week Higher
	\$	\$	
Dairy products	2.57	2.45	5.8
Bakery products	1.96	1.93	1.6
Meat	5.04	4.72	6.8
Poultry and fish	1.34	1.20	11.7
Eggs	1.00	0.90	11.1
Cereals	0.71	0.57	24.6
Fats and oils	1.36	1.22	11.5
Fresh fruits	1.34	1.23	8.9
Fresh vegetables	1.29	1.21	6.6
Canned and dried fruit	0.56	0.49	14.8
Canned and dried vegetables	0.59	0.51	15.7
Frozen foods	0.099	0.087	13.8
Other groceries	3.19	2.79	14.3
Miscellaneous	0.11	0.11	—
Meals eaten out	2.12	2.05	3.4

eaten out, dairy products, and fresh fruits and vegetables showed smaller differences than other groups.

The difference between first-week and second-week expenditures was not examined in 1955. In the 1957 panel survey respondents remained in the survey for two-week periods in a maximum of three consecutive months. Distribution of records by size of total expenditure for the first to the sixth week of reporting revealed similar patterns in alternate weeks, with a higher median expenditure in the first week of each pair, regardless of whether or not it was the first, second or third month of reporting. A summary of these distributions over the year is shown in Table 3. These results might be interpreted as verifying the 1953 supposition

TABLE 3
DISTRIBUTION OF FAMILIES BY SIZE OF TOTAL FOOD EXPENDITURE IN FIRST AND SECOND WEEKS FOR
THREE MONTHS OF SURVEY PARTICIPATION, 1957

Weekly Expenditure	First Month		Second Month		Third Month	
	Week 1	Week 2	Week 1	Week 2	Week 1	Week 2
	—percentage—					
Under \$10	2.9	4.4	3.3	4.3	3.8	4.9
\$10-19	36.2	41.4	37.0	41.2	36.7	40.4
\$20-29	41.3	38.0	41.5	38.3	42.7	39.5
\$30-39	15.3	12.9	13.9	11.8	12.8	11.5
\$40 and over	4.3	3.3	4.3	4.4	4.0	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Median	22.44	21.15	22.34	21.17	22.22	21.19
No. of records	1,781	1,757	1,211	1,217	611	607

that higher first-week expenditure reflected a genuine difference in weekly buying habits, rather than a difference arising from survey conditioning. However it is also likely that the fact of starting again after a two-week interval caused a repetition of the higher first-week effect.

In 1962 respondents were asked to complete four weekly diaries, approximating a full month. Interviewers made a total of four visits, returning after seven and fourteen days to pick up completed records and leave additional diaries, and again after twenty-eight days to pick up records for the final two weeks. In each of the seven cities in the sample, the first week averaged higher than the other three weeks. For the seven-city composite, an estimate based on the first two weeks was 1.6 percent higher than an estimate based on four weeks. In three of the cities the fourth-week average was lowest, and in two cities the third-week average was lowest. Averages by week for each city and for the weighted composite are shown in Table 4. Although there is a declining tendency in the third and fourth weeks, it is

TABLE 4
AVERAGE FOOD EXPENDITURES BY CITY FOR FIRST, SECOND, THIRD AND FOURTH WEEKS OF RECORD-KEEPING IN 1962

City	First Week	Second Week	Third Week	Fourth Week	Average All Weeks
	Average Dollar Expenditure Per Family				
St. John's	26.15	23.39	23.75	22.63	23.98
Halifax	23.01	20.84	22.17	22.04	22.02
Montreal	26.22	24.70	24.06	24.45	24.86
Toronto	23.90	23.06	22.98	22.75	23.18
Winnipeg	21.84	21.48	21.26	20.99	21.39
Edmonton	21.40	20.85	19.99	20.11	20.59
Vancouver	21.61	20.12	20.24	21.45	20.86
Seven-city composite	24.05	22.91	22.68	22.80	23.11
Weekly Expenditure as percentage of First-week Expenditure					
St. John's	100.0	89.4	90.8	86.5	91.7
Halifax	100.0	90.6	96.3	95.8	95.7
Montreal	100.0	94.2	91.8	93.2	94.8
Toronto	100.0	96.5	96.2	95.2	97.0
Winnipeg	100.0	98.4	97.3	96.1	97.9
Edmonton	100.0	97.4	93.4	94.0	96.2
Vancouver	100.0	93.1	93.7	99.3	96.5
Seven-city composite	100.0	95.3	94.3	94.8	96.1

not marked. An examination of weekly expenditures by commodity groups for individual cities showed that the frequency of highest first-week expenditure varied among months and cities. (Table 5) St. John's and Montreal were the only cities where highest first-week expenditures on total food were observed in more than six months of the year, and even in these cities only half of the commodity groups had higher first-week expenditure in more than six months of the year.

TABLE 5
NUMBER OF MONTHS IN WHICH FIRST-WEEK FOOD EXPENDITURE WAS HIGHEST BY COMMODITY GROUP
AND CITY, 1962

Commodity Group	St. John's	Halifax	Montreal	Toronto	Winnipeg	Edmonton	Vancouver
Dairy products	10	6	9	7	4	4	5
Eggs	8	4	10	6	6	6	5
Bakery products	5	6	4	3	1	5	4
Cereal products	6	3	7	7	2	5	3
Meat and poultry	7	4	8	3	6	5	5
Fish	2	4	5	6	4	4	1
Fats & Oils	5	6	7	8	3	1	4
Other groceries	10	5	5	5	5	2	5
Canned & dried fruits	6	4	3	4	2	4	2
Canned & dried vegetables	7	6	7	5	4	4	1
Fresh fruits	8	6	4	7	3	2	5
Fresh vegetables	8	4	8	7	3	4	4
Frozen foods	5	2	4	5	3	7	—
Prepared foods	3	5	1	5	3	3	1
Purchased & eaten-away	4	3	5	1	4	2	2
Total Food	9	5	8	6	4	4	4

2.5. Comparison of Estimates Built up from Diary Detail with Recall Estimates

On the annual recall schedule, expenditure on food for home use was obtained by a question concerning estimated expenditure in an average week. A test in 1952-53 in conjunction with the one-week recall schedule had indicated that estimates of total expenditure for an average week compared very closely to the totals of detail collected from the same families. Over a four-month period the two averages differed by 0.5 percent. This, of course, is a much less stringent test than the comparison of diary and annual recall averages over the year which is shown in Table 6 for 1953, 1955 and 1957. In this table the weekly diary averages have been converted to annual averages. For the three years, the two sets of five-city averages are remarkably close, with the annual recall averages being 0.9 percent, 1.4 percent and 0.7 percent respectively above the diary averages. The samples were crudely self-weighting, with Montreal and Toronto accounting together for about 60 to 70 percent of the samples. Thus the close agreement of the two sets of totals in the five-city average was the result of off-setting tendencies among the city averages. For Montreal, the annual recall average was consistently below the diary average, whereas for Toronto and other cities the recall averages were, with one minor exception, consistently higher. Montreal was the only city which showed recall results to be consistently below the diary, not only for food at home, but also for food away from home, for which differences in results between the two methods were more erratic.

In spite of these differences, changes in the level of total food expenditure between surveys were consistent between the two methods. The diary surveys showed a rather surprising drop in family food expenditure from 1953 to 1955, which was paralleled by the recall survey. Between 1955 and 1957 the increase in

TABLE 6
COMPARISON OF AVERAGE ANNUAL FOOD EXPENDITURES OBTAINED BY ANNUAL RECALL AND BY
WEEKLY FOOD DIARIES BY CITY 1953, 1955 AND 1957(\$)

	Five-city Average	Halifax	Montreal	Toronto	Winnipeg	Vancouver
Total Food Expenditures						
1953						
Weekly diary ¹ × 52	1170.00	1030.12	1315.08	1114.88	1012.44	1135.16
Annual recall	1181.00	1104.50	1277.00	1152.50	1106.90	1129.00
Annual recall as p.c. of diary	100.9	107.2	97.1	103.4	109.3	99.5
1955						
Weekly diary × 52	1112.80	997.36	1203.28	1073.28	946.92	1145.56
Annual recall	1128.20	1040.30	1151.10	1158.80	1026.80	1178.00
Annual recall as p.c. of diary	101.4	104.3	95.7	108.0	108.4	102.8
1957						
Weekly diary × 52	1180.40	1094.08	1298.44	1175.20	1080.04	1139.84
Annual recall	1189.00	1073.80	1234.60	1213.60	1098.20	1203.30
Annual recall as p.c. of diary	100.7	98.1	95.1	103.3	101.7	105.6
Food at Home						
1953						
Weekly diary ¹ × 52	1054.04	990.08	1162.20	1009.84	901.16	1041.04
Annual recall	1078.80	1057.10	1152.70	1047.50	997.60	1045.30
Annual recall as p.c. of diary	102.3	106.8	99.2	103.7	110.7	100.4
1955						
Weekly diary × 52	1005.16	939.12	1068.60	976.56	849.68	1051.44
Annual recall	1014.40	972.00	1025.10	1026.80	908.30	1090.80
Annual recall as p.c. of diary	100.9	103.5	95.9	105.1	106.9	103.8
1957						
Weekly diary × 52	1042.08	1012.44	1106.04	1041.56	970.84	1025.44
Annual recall	1051.90	1012.40	1067.70	1052.50	991.60	1106.00
Annual recall as p.c. of diary	100.9	100.0	96.5	101.1	102.1	102.1
Food away from home						
1953						
Weekly diary ¹ × 52	116.23	40.04	152.88	105.04	111.28	94.12
Annual recall	102.20	47.40	124.30	105.00	109.30	83.70
Annual recall as p.c. of diary	87.9	118.4	81.3	100.0	98.2	88.9
1955						
Weekly diary × 52	107.64	58.24	134.68	96.72	97.24	94.12
Annual recall	113.80	68.30	126.00	132.00	118.50	87.20
Annual recall as p.c. of diary	105.7	117.3	93.6	136.4	121.9	92.7
1957						
Weekly diary × 52	138.32	81.64	192.40	133.64	109.20	114.40
Annual recall	137.10	61.40	166.90	161.10	106.60	97.30
Annual recall as p.c. of diary	99.1	75.2	86.7	120.5	97.6	85.1

¹ In 1953 the diary record was used exclusively from June to December. From January to May the first week's expenditure was collected by recall and the second week was by diary record.

the diary estimate of total food expenditure approximated the price increase between the two periods, while the increase in the annual recall estimate was somewhat smaller.

Results for the year 1962 were omitted from the foregoing comparison because there were some changes in the family eligibility criteria between the diary survey and the recall survey. On the basis of 1959 survey results it was decided to extend the family type criteria to include all families of two to six persons. There was also a small change in the income range which raised the upper income limit from \$7,000 to \$7,500 in the recall survey. Table 7 shows averages for comparable family types and income groups cross-classified over the whole sample. At the lowest income range (\$3,000-3,999) the annual recall results were substantially below the diary (8.7 percent), reflecting similar relationships in the majority of family type groups. For the other income groups recall exceeded diary by percentages which increased as income increased, from 2.1 percent (\$4,000-4,999) to 4.3 percent (\$5,000-5,999) to 9.9 percent (\$6,000-6,999). Only two family type groups showed the recall average to be higher at all income levels namely the smallest family, consisting of two adults, and the three adult one child family. These groups averaged the largest differences between the two methods, 13.9 percent and 9.1 percent respectively. The fact that the 1962 diary covered four weeks provides a partial explanation for the greater difference shown in total expenditure for the whole sample in 1962.

2.6. Response Differences

Response rates are expressed as the percentage of eligible families from whom usable records were collected. This rate assumes that all non-contacts were eligible for the survey, and may therefore understate the response slightly.

Appendix I, which summarises the methods and information collected from the 1953, 1955, 1957 and 1962 surveys, shows differences in response for different methods and types of data. The highest response registered over the whole period was for the combination of one-week recall and one-week diary in the first five months of 1953. This rate of 82 percent represented monthly response rates ranging as high as 87 percent in the first month, and compared with an average response of 66 for the remainder of 1953. Not all of this difference can be attributed to the difference in method. Monthly surveys, unfortunately, suffer from lower response rates in the summer months, so that response rates for the second half of the year generally average lower than for the first half. Also, some account should be taken of the initial enthusiasm for a completely new project on the part of field staff and interviewers.

In both 1953 and 1955 a partial budget interview preceded the request to keep a food diary. The response rates on these schedules averaged 78 and 77 percent for 1953 and 1955, respectively, whereas the diary survey response for the whole of 1953 was 72 percent and that for 1955 was 66 percent.

In 1957, in order to induce a good response on the panel food survey, no other expenditure data were collected in the interview, and the schedule on which basic family information was collected was simplified as much as possible. The food diary was also changed to a simpler form with broad guidelines for entries instead of a list of items. However, the response rate of 67 percent on the basis of at

TABLE 7
COMPARISON OF AVERAGE ANNUAL FOOD EXPENDITURES OBTAINED BY ANNUAL RECALL AND BY WEEKLY FOOD DIARIES BY FAMILY TYPE AND INCOME, 1962
(5)

Income Group	All Families	Two Adults			Two Adults			Two Adults			Two Adults			Three Adults		
		Adults	Adults	Adults	One Child	Two Children	Three Children	One Child	Two Children	Three Children	One Child	Two Children	Three Children	One Child	Two Children	Three Children
All Incomes																
Weekly Diary $\times 52$	1,183	913	1,188	1,464	1,148	1,273	1,420	1,543	1,333							
Annual recall	1,223	1,040	1,208	1,481	1,159	1,310	1,381	1,582	1,454							
Recall as percent of diary	103.4	113.9	101.7	101.2	101.0	102.9	97.3	102.5	109.1							
\$3000-3999																
Weekly diary	1,109	861	1,227	1,273	1,128	1,214	1,332	1,551	1,292							
Annual recall	1,013	897	1,152	1,052	1,050	1,151	1,337	1,489	1,306							
Recall as percent of diary	91.3	104.2	93.9	82.6	93.1	94.8	100.4	96.0	101.1							
\$4000-4999																
Weekly diary	1,162	871	1,129	1,504	1,119	1,227	1,438	1,668	1,289							
Annual recall	1,186	1,018	973	1,440	1,158	1,248	1,305	1,469	1,469							
Recall as percent of diary	102.1	116.9	86.2	95.7	103.5	101.7	90.8	88.1	114.0							
\$5000-5999																
Weekly diary	1,223	932	1,147	1,356	1,177	1,341	1,429	1,474	1,397							
Annual recall	1,275	1,091	1,170	1,506	1,159	1,358	1,365	1,678	1,422							
Recall as percent of diary	104.3	117.1	102.0	111.1	98.5	101.3	95.5	113.8	101.8							
\$6000-6999																
Weekly diary	1,233	1,020	1,252	1,606	1,178	1,305	1,445	1,423	1,344							
Annual recall	1,355	1,176	1,374	1,587	1,254	1,449	1,543	1,627	1,498							
Recall as percent of diary	109.9	115.3	109.7	98.8	106.5	111.0	106.8	114.3	111.5							

least one diary was not significantly higher than in the earlier surveys. Of the families who supplied data in the first month, 72 percent cooperated in a second month, and 39 percent submitted usable records by mail in a third month. The distribution of families by characteristics according to participation in one, two or three months is shown in Table 8. The most cooperative group included a

TABLE 8
PERCENTAGE DISTRIBUTION OF FAMILIES ACCORDING TO FAMILY ATTRIBUTES, CLASSIFIED BY NUMBER OF MONTHS REPORTING, FIVE CITIES, 1957

	All families	Survey duration		
		One month	Two months	Three months
Number of families	1,743	466	618	659
	Percentage distribution			
Income:				
\$2,500-2,999	12.9	15.5	12.8	11.2
3,000-3,499	15.4	13.5	14.5	17.6
3,500-3,999	17.2	17.2	16.7	17.8
4,000-4,499	14.5	14.4	15.5	13.7
4,500-4,999	10.9	9.2	12.0	10.9
5,000-5,499	10.1	9.2	10.5	10.3
5,500-5,999	5.7	5.1	5.8	5.9
6,000-6,499	5.7	8.2	4.9	4.7
6,500-7,000	7.6	7.7	7.3	7.9
Total	100.0	100.0	100.0	100.0
Age of family head:				
Under 25	3.9	6.4	3.5	2.3
25-34	27.3	26.2	32.2	24.9
35-44	27.5	23.8	25.6	32.0
45-54	18.4	20.0	17.8	17.7
55-64	12.4	11.8	12.6	12.5
65 and over	10.0	11.6	8.3	10.6
Total	100.0	100.0	100.0	100.0
Employment status of wife of head:				
Not employed	75.3	71.9	76.2	76.9
Employed	17.3	18.4	17.2	16.6
No wife of head	7.4	9.7	6.6	6.5
Total	100.0	100.0	100.0	100.0
Tenure and living quarters:				
Owner, single house	49.7	45.7	43.7	58.3
Owner, other	5.7	5.6	7.1	4.5
Tenant, single house	8.4	7.7	10.0	7.3
Tenant, other	36.2	41.0	39.2	29.9
Total	100.0	100.0	100.0	100.0
Education of family head:				
Primary	41.1	42.9	42.2	38.7
Secondary	49.3	47.4	48.7	51.4
Partial University	4.8	5.2	4.9	4.4
University degree	4.8	4.5	4.2	5.5
Total	100.0	100.0	100.0	100.0

slightly greater proportion of families with children and of families with heads aged between thirty-five and forty-four years, and a smaller proportion where the wife was an earner. Education level appeared to have a slight effect on better cooperation.

For 1962, family characteristics were observed in relation to number of weeks for which records were kept. However, since 86 percent of respondents kept four-week records, variations in the composition of groups were of minor importance.

In contrast to the relatively high response rate for partial budget recall, the complete budget response was lower than the diary response in the three periods. The rather marked decline in the response rate from 1953 to 1955 cannot be related to any change in schedule or survey method. For 1955 and 1957 the total of refusals and non-contacts was about 35 percent, and the slight difference in response between these years is due to an increase in the number of editing rejects in 1957. The up-turn in response for both methods in 1962 may represent some improvement in field controls.

2.7. Panel Food Diary Surveys

The 1957 panel survey of food expenditures was introduced in order to study month-to-month changes by comparing expenditures for matched groups of families. The panel method not only increased the size of monthly samples without increasing the number of initial interviews required, but also lessened the variability between months because of the stability provided by the matched samples.

The third month of the panel survey, in which respondents kept additional records which had been left with them on the interviewer's final visit was experimental in that it essayed a compromise between the greater efficiency of an interview survey and the lower costs of a mail survey. Over six hundred additional monthly records were submitted by mail. A comparison of averages for the third month with those for the first and second months did not reveal any sign of under-reporting. As already noted in the preceding section, the 39 percent of the original respondents who cooperated in the third month had somewhat different characteristics from the remainder of the sample.

2.8. Design of the Diary Record

In 1953 and 1955 an itemized diary form was used in the food survey with space for daily entries opposite each of about 150 items. This represented a considerable change in form from the diary booklets used in 1948, which had a double page for each day, on which purchases were entered under broad food categories. The 1953-55 diary was condensed to a single sheet, folded to provide four pages in a format designed to facilitate processing rather than reporting. A small test preliminary to the 1957 survey showed that the majority of respondents found the more open type of diary less difficult than the detailed one. Accordingly, for the 1957 survey, respondents were asked to list their purchases under fifteen headings. Milk, bread and food eaten out were the only items for which space was provided for daily entries, but it was emphasized that purchases should be entered as soon as possible after they were made. Quantities were omitted in 1957 because editing

difficulties in 1953 and 1955 had raised doubts concerning the quality of information which could be obtained.

The change in method left some unanswered questions concerning expenditure changes between 1955 and 1957. The increase in average expenditure was consistent with the increase in food prices between the two periods, but there was evidence of more complete reporting in 1957 for miscellaneous groups. On the other hand, there were declines in expenditures between 1955 and 1957 for some items previously listed.

2.9. Partial Budget Schedules in 1953 and 1955

"Split" or partial budget schedules were used in 1953 to experiment with shorter recall periods for selected areas of the budget. The advantage of collecting expenditure information on a partial basis is that it makes for a much more manageable interview for both interviewer and respondent, and also that it permits flexibility in adapting the length of the recall period to suit the type of information sought. The partial schedules were successful in eliciting better response than the complete budget survey. Otherwise, the comparison with annual recall data tended to cast more doubt on the virtue of shorter recall periods than on annual recall. Partial budget results yielded a total expenditure for shelter and fuel which was 25 percent above the recall estimate, while the composite clothing expenditure from the quarterly recall clothing surveys was about 27 percent above the annual recall. In view of the general tendency for disbursements to exceed receipts in the annual surveys, it seemed improbable that these differences resulted from understatement in annual recall. It was considered more likely that there was a tendency to include purchases which were made outside the survey period, an error which more recent survey takers have sought to eliminate by the use of a "bounding" technique [2]. In the case of the shelter survey, the use of two different recall periods (See Appendix I) on the same schedule was a cause of confusion. Reasonably good agreement was found for the homeowner expenses which referred to the previous twelve months and for regularly recurring expenses such as rent and utilities. The partial budget schedule used in 1955 covered the same length of period as the complete budget, the only point of difference being that a different twelve-month period was covered in each monthly survey. It provided a much larger sample for housefurnishings and other durables, which are subject to larger sampling errors because of less frequent purchase patterns, yielding records for 2,500 families over the year, compared to an annual recall survey of 800. A comparison of results showed considerable consistency between the two, both in average expenditures and percentages of families reporting.

3. EXPERIENCE WITH RECALL AND DIARY IN 1969-70

3.1. The Sample

Following the 1962 survey program, no further diary surveys were taken until 1969. It has been noted that the comparison of results in the period 1953-1962 referred to a well-defined group of families living in large urban centres. The 1969-70 national survey results provide an opportunity to compare data obtained from

larger and less restricted samples. In both phases of the survey, the samples were designed to represent families and unattached individuals living in private households in all areas of Canada, both urban and rural, except the Yukon and the North-west Territories.

As in previous surveys, the area sampling frame designed for the labour force surveys was utilized. For each segment of the survey a full labour force sample was set aside, from which a sub-sample was drawn. For the diary survey, the sample size was approximately 14,400 households, divided into monthly samples of 1,200 households each. The sample for the recall survey comprised 21,978 occupied households. During 1969, 10,022 spending units (excluding boarders) cooperated to provide weekly diaries of food purchases. In the recall survey, 15,140 spending units completed usable schedules of family expenditures, income and changes in assets and debts for the full year.

3.2. Field Operations and Response

Dates for the food survey were staggered as much as possible during the year in order to give a representation of weeks. Interviewers visited the families to secure their cooperation and instruct them in the use of the diary. A schedule was also completed at the first interview covering family income and other family characteristics. Two weekly diary forms were left with respondents to be completed for two consecutive seven-day periods, the first of which began with the date of interview. On returning to pick up the diary the interviewers checked them over for completeness and adequacy of descriptions and quantities.

Field operations for the recall survey commenced in mid-January, 1970 and continued until the end of March, 1970. The response rate of 69 percent was appreciably above that of the diary survey, which even at 65 percent, included respondents who submitted diaries but refused income information, amounting to about 6 percent of respondents who completed usable records. Resistance to giving income information occurred in small urban and rural areas, even though respondents were given the option of making a confidential return by mail to the regional office. Diaries without income were included and classified under an "income not stated" class. The percentage of non-contacts was 9.5 in the diary survey, compared with 7.5 in the recall survey. This difference reflected the greater number of non-contacts in the summer months of the diary survey. The percentage of editing rejects was 2.0 percent for recall and 1.4 percent for diary. The higher recall figure may be attributed in part to the use of the balancing difference between receipts and disbursements as an over-all check of the validity of schedules. Missing information was also more easily apparent on the recall schedule. The term "editing reject" refers only to completed schedules which were found to be unacceptable. A considerable number of schedules which were flagrantly incomplete were classed refusals. In the diary the criterion for completeness was less clear. Usually the basis for rejection was the interviewer's comments or insufficient detailing and description of commodities.

3.3. The Diary

It was decided early in the planning stages of the food expenditure survey to cover items other than food on the diary record. These items would include

mainly other household supplies which are usually purchased along with food (cleaning supplies, paper supplies and food wraps, pet foods) and other small items which may or may not be purchased in supermarkets, such as personal care supplies, newspapers, magazines and books. Alcoholic beverages and tobacco products were added to the list to see if results, which are consistently understated in recall, could be improved by the diary method. The inclusion of rural population also made it desirable to collect information on home-produced food, even though this was a difficult concept to fit into a survey dealing with expenditures rather than consumption.

Critical consideration was given once more to the diary format adopted in 1957 and used with minor modifications in 1962. The processing of this type of diary involves clerical coding of each item. This has distinct advantages with respect to accurate classification, but adds greatly to the time consumed in processing. The feasibility of a return to an itemized diary, which could be pre-coded, was therefore explored. It resulted in a much more formidable document than the itemized schedules of 1953 and 1955. Approval which came late in 1968 to make the diary survey a part of the national survey program was the determining factor in the rejection of the itemized schedule. The final diary form was not very different from the format used in 1957 and 1962. It was a four-page schedule with the two inner pages being devoted to food, under fifteen major categories, and with space for additional non-food items on the fourth page. The non-food groups required some definition, and this was provided on a separate sheet which listed the items and types of items to be included in each group. Space was provided for daily entries of food eaten, under three types of meals, between-meal foods and beverages. Quantity information, specifying number and size of units, as well as expenditures, was collected.

It is probably worth noting that while field operations were in progress in Canada in 1969 Sudman and Ferber were testing different types of diary format and different record-keeping periods in Illinois. It was gratifying to learn that their research proved the "product diary," which was similar in format to the Canadian diary, as the most effective of the three diaries tested with respect to response and level of expenditure. They also concluded that either a two-week or three-week period was the optimum period for both response and accuracy of expenditure [3].

3.4. Difference in Average Expenditures between First and Second Diary Weeks

The higher first-week expenditures observed in earlier surveys were evident also in 1969 diary results. A detailed comparison for both food and non-food items appears in Table 9. For food and non-food items combined, families of two or more who kept two records reported expenditures which averaged 9.5 percent lower in the second week. For food and non-food separately second-week declines were 8.0 and 14.1 percent respectively.

In the food group, food prepared at home was largely responsible, with a second-week decline of 9.0 percent, compared with 3.0 percent for meals out and between-meal food. Board away from home was the only food group to show an increase (6.4 percent) between the first and second week. All commodity groups were reported at lower levels in the second week. The smallest differences were

TABLE 9
AVERAGE EXPENDITURES IN FIRST AND SECOND SURVEY WEEK BY FAMILIES
WHO KEPT TWO RECORDS, FAMILIES OF TWO OR MORE—CANADA 1969 (\$)

	All Families Two Records	
	Week 1	Week 2
<u>Total Food</u>	32.06	29.51
Prepared at home	27.48	25.02
Fresh milk	2.10	2.02
Other dairy products	2.29	2.04
Eggs	0.84	0.75
Bakery	2.66	2.46
Cereals	0.77	0.73
Meat and poultry	8.78	7.98
Fish	0.56	0.49
Fats and oils	0.56	0.51
Beverages	1.47	1.31
Miscellaneous groceries	2.17	1.97
Canned fruit and vegetables	1.41	1.26
Fresh fruit and vegetables	2.81	2.53
Frozen	0.43	0.38
Prepared foods	0.62	0.59
Meals and snacks	4.11	3.99
Board	0.47	0.50
<u>Total Non-Food Items</u>	10.05	8.64
Household cleaning supplies	1.32	1.10
Paper supplies and food wraps	0.65	0.54
Garden supplies, seeds, plants, fertilizers	0.12	0.07
Pet food	0.2	0.22
Other miscellaneous, matches, candles, etc.	0.02	0.03
Toilet preparations	1.34	1.09
Cigarettes and tobacco	2.81	2.63
Alcoholic beverages	2.57	2.20
Newspapers	0.53	0.44
Books	0.21	0.14
Magazines	0.23	0.18
Weekly records	8,336	8,336
Number of families	8,336	8,336
Average family income	8,322	8,322
Average family size	3.95	3.95

registered for fresh milk (3.8 percent) and prepared and take-out foods (4.8 percent). With very few exceptions percentages reporting purchase among commodities were lower by at least one or two percentage points in the second week.

The greater difference for non-foods reflected substantial weekly differences among all groups. The closest agreement between weeks was shown by Cigarettes and Tobacco, with a decline of 6.4 percent. For other groups differences ranged between 16 and 42 percent. A decline of 17 percent for newspapers does not fit comfortably into the rationalization that higher first-week buying is balanced by lower second-week buying.

Given the hypothesis that first-week buying tends to be above-average, it was considered that freezer ownership might be related to the incidence of higher first-week purchasing for food. Families were classified according to whether or not they owned freezers or combination refrigerator-freezers, as distinguished from ordinary refrigerators with limited storage capacity. In both dollar and percentage terms the families with freezers registered somewhat larger differences between first and second weeks:

	Without Freezer		With Freezer	
	Week 1	Week 2	Week 1	Week 2
Total Food Expenditure	\$30.11	\$27.87	\$33.74	\$30.82
Percentage below Week 1		7.4		8.7
Total Non-food Expenditure	\$10.01	\$8.69	\$10.68	\$9.04
Percentage below Week 1		13.2		15.4

The differences were somewhat greater for non-food items than for food. Income for families with freezers averaged 13 percent above income for those without freezers, which would account for the difference in expenditure levels between groups. Of the two groups, the differences shown by freezer families are more marked, and this may reflect the greater capacity for stocking up in the first week. This may be one aspect of the income effect on differences between recall and diary which is examined in a later section.

The foregoing comparisons excluded 684 families who kept only one record. Of these, 186 kept records in the second survey week, and their expenditure was slightly higher than that of families who kept records in the first survey week. Both weeks were higher than the first-week average of families who kept two records. It might have been expected that families who dropped out would show signs of under-reporting in the first week. The fact, that, on average, they did not, suggests to the suspicious that some of them may have reported more than one week's buying on one diary.

3.5. *Comparison of Per Capita Estimates Derived from Recall and Diary*

Results for recall and diary are examined for Canada as a whole in per capita terms, with reference to aggregate data available from national accounts sources.

Table 10 shows national per capita estimates derived from the diary and recall surveys for the two food groups and six non-food groups. In both surveys population weights were derived from projections of 1966 data on families and unattached individuals living in private households. Unattached individuals living as boarders or roomers received a somewhat lesser weight in the food survey, and minor adjustments have been made in the diary estimates to make the weighting between families and individuals consistent with the recall weights. Also, some re-arrangements of group content have been made to permit comparisons with national accounts estimates.

The confrontation of expenditure survey estimates with aggregate estimates of personal consumer expenditure does not necessarily result in a moment of truth. This is especially so for some of the rather small commodity groups for which

TABLE 10
COMPARISON OF PER CAPITA ESTIMATES BASED ON
DIARY AND RECALL RESULTS, 1969

	Diary	Recall
	dollars	
<u>Food</u>		
Prepared at home	356.3	385.5
Away from home	66.4	71.9
<u>Non-food</u>		
Household cleaning supplies (toilet soap included)	19.6	21.0
Paper supplies and food wraps	9.3	12.9
Toilet preparations (toilet soap excluded)	14.3	20.6
Cigarettes and tobacco	37.5	48.2
Alcoholic beverages	34.2	45.7
Store purchased	25.9	32.3
Licensed premises	8.3	13.4
Newspapers and magazines	10.0	10.9
Books (excluding school)	2.8	4.5
Stationery and greeting cards	0.9	2.3

comparisons are attempted, for which the national accounts data are beset by ambiguities concerning the content of the data from which they are derived. In all cases the recall estimates were higher than the diary estimates, with the closest agreement being shown by the two food groups, Cleaning Supplies and Newspapers and Magazines, all of which show recall-diary differences to be less than 10 percent. For the other groups, the differences between recall and diary range as high as 50 and 60 percent.

The results for Food at Home appear to support the diary as a collection method since it yields a per capita estimate only 4.7 percent above the national accounts per capita estimate of \$340.2, whereas the recall estimate is 13.3 percent above. For Food Away from Home, the recall estimate is closer than the diary to an unpublished accounts estimate, but appears to have understated it by about 10 percent.

For Cleaning Supplies, the relatively good agreement between recall and diary is not corroborated by an unpublished national accounts estimate, which is not much more than half the higher of the two survey estimates. Conceptually, the accounts estimate for cleaning supplies includes all soaps, including toilet soap, and for this reason toilet soap has been transferred to this group in the survey estimates. It is admitted that there may be some differences in reporting on the part of stores: supermarkets would likely report toilet soap with cleaning supplies, but drug stores and department stores might report it under toiletries. This item would not account for all the difference, but it may be symptomatic of the kind of difficulties in sales data for this group.

For Paper Supplies and Food Wraps, an unpublished accounts estimate is just below the recall figure and about one third higher than the diary estimate. Similarly, for Toilet Preparations, which include well-defined categories in the

national accounts estimate of \$18.9, the recall estimate of \$20.6 is about 9 percent above, whereas the diary estimate is about 25 percent below.

It was hoped that record-keeping might provide more satisfactory data for both Cigarettes and Tobacco and Alcoholic Beverages. Results were disappointing in that they produced estimates which were considerably below the admittedly low recall estimates. The accounts estimate for Cigarettes and Tobacco of \$61.1 per capita was 27 percent above the recall figure and 63 percent above the diary. The accounts estimate of \$83.0 for alcoholic beverages is also unambiguous in content except for some problems with respect to deductions which have to be made for business consumption and the service element in sales in bars and restaurants. Survey estimates of \$34.2 and \$45.7 for diary and recall respectively were broken down between store purchases and beverages consumed on licensed premises. For the latter group, the diary results were 61 percent below recall.

The accounts estimate of \$32.1 for Newspapers, Magazines and Books includes stationery and educational books and supplies. The item Writing Materials and Greeting cards in survey data was transferred from Paper Products to this group. Educational books and supplies were not covered in the diary survey, but were available from the recall survey. Comparison with the accounts indicates that books are considerably understated in both surveys, assuming that Newspapers and Magazines as a group are reasonably reliable. Newspapers appeared to be better reported on recall, whereas Magazines were better reported on the diary.

3.6. *Comparison of Recall and Diary by Income*

The variation in recall-diary differences by income quintile is shown in Table 11. In order to observe more homogeneous groups, unattached individuals are excluded from the classification.

The use of income quintiles has the advantage of permitting comparison of sizeable groups which have the same relative position in the income range, thus minimizing the effect of somewhat different reference periods for income in the two surveys. For the diary, income collected in each monthly sample referred to the previous twelve months, and thus over the whole sample referred to periods ranging back through 1968, whereas, for the recall survey, income referred to the calendar year 1969.

Over the majority of commodity groups, the differences between recall and diary estimates increased from the first to the fifth quintile.

For Food at Home, results were similar to the income effect shown for 1962 in Table 7. The 1969 quintile differences provide at least a partial explanation for the greater size of differences between methods in 1969 compared to the earlier surveys. For the first quintile, recall results averaged 3.8 percent below the diary, whereas for the second to fifth quintiles the recall averages exceeded the diary by percentages which increased from 1.0 in the second quintile to 5.6, 7.5 and 9.8 percent respectively in the third, fourth and fifth quintiles. The sixty percent of families in the second to fourth quintiles may be regarded as roughly comparable to the target group observed in the 1953-62 surveys. Over the three middle quintiles, the difference between methods averaged 4.7 percent for Food Prepared at Home and 4.0 percent for Total Food. For Meals Eaten Out and Between-Meal

TABLE 11
COMPARISON OF RECALL AND DIARY BY INCOME QUINTILE FAMILIES OF TWO OR MORE—CANADA 1969 (\$)

	First Quintile		Second Quintile		Third Quintile		Fourth Quintile		Fifth Quintile	
	Recall	Diary	Recall	Diary	Recall	Diary	Recall	Diary	Recall	Diary
Food	1,046	1,087	1,351	1,337	1,506	1,426	1,606	1,404	1,789	1,630
Prepared at home	34	57	84	106	118	131	182	207	312	357
Meals in eating places	20	25	37	50	45	53	54	68	54	68
Between meal food	19	14	32	21	48	21	75	37	132	42
Board out of town	48	57	69	67	75	66	79	66	81	66
Household cleaning supplies	34	27	49	35	59	40	66	46	77	49
Paper supplies and food wraps	9	2	7	3	9	6	11	6	19	11
Garden supplies, seeds, plants, fertilizers	8	8	12	9	17	12	18	16	25	17
Pet food	45	46	75	63	93	66	111	73	137	80
Toilet preparations	102	109	172	139	186	153	207	163	223	170
Cigarettes and tobacco	60	68	110	92	150	114	194	161	286	226
Alcoholic beverages										
Reading:										
Newspapers	18	16	24	25	31	27	34	30	42	34
Magazines	4	6	6	9	8	11	11	13	17	18
Books	4	4	9	6	14	10	20	11	33	18
Family income	3,181	3,195	6,122	5,975	8,219	7,877	10,612	10,320	17,021	16,702
Sample size	3,266	2,373	2,799	1,780	2,550	1,634	2,381	1,467	2,113	1,189

Food, relative differences were considerably greater than for Food Prepared at Home, with the closest agreement being shown in the third quintile. For Board out of Town the disparities between recall and diary increased from 36 percent to over 200 percent between the first and the fifth quintiles.

The two upper income quintiles had by far the greatest impact on the three types of error which appeared to affect the food estimates, namely recall overstatement in Food Prepared at Home, recall under-statement in Meals Out and Between-meal Food, and diary under-reporting on Board out of Town.

Among the non-food groups, both sets of estimates increased with rising income. An exception was found in the dairy averages for Cleaning Supplies which remained relatively stable from the second to the fifth quintile, whereas the recall averages increased, but with smaller increments in each successive quintile. Although the income effect might be less on purchases of cleaning supplies than other groups, it is hard to believe that there is no income effect at all when one considers the multiplicity of new and exciting products promoted by the advertising media.

Instances of lower recall estimates were more numerous in the first quintile. This may reflect in part the fact that the lowest income groups in the diary would include spending units with part-year income or with much lower income than their economic status at the time of the survey. In the recall survey the reference period for income and expenditures coincided, and part-year spending units were not included in averages for the year. There might also be a greater tendency on the part of low-income families to make above-average purchases in the diary survey to make a "good showing." The effect of income on first-week/second-week differences might shed some light on this.

3.7. Appraisal of 1969 Experience with Recall and Diary

The purpose in adding non-food items to the diary in 1969 was to obtain better estimates for items which are regarded as particularly troublesome to recall. There is no evidence that the diary method produced better results. The best that can be said is that in two instances (Household Cleaning Supplies; Newspapers and Magazines) the diary results agreed with recall figures within 10 percent. In view of the more satisfactory performance of the diary for Food Prepared at Home, its apparently poor showing with respect to non-food items is puzzling. For some items, such as alcoholic beverages, stationery and greeting cards the diary may have missed out on substantial holiday purchasing. Otherwise several possible reasons might be advanced.

1. The extension of the diary from food to other specific areas may have resulted in omissions which would not have occurred either in a survey limited to food or one covering all purchases. Some difficulties were anticipated when the survey was being planned, and a comprehensive list of the expected items was given to respondents as a guide, in addition to the headings provided on the schedule. There was a possibility that this list, which was not attached to the schedule, could have been mislaid. This would not explain the differences in items which were well-defined on the schedule. Cleaning Supplies and Toilet Prepara-

tions, which were the most heterogeneous groups, would have been more affected than others.

2. There may have been a tendency for spending units to report only supermarket purchases for those items which could be purchased both in supermarkets and in other stores such as drug and department stores. This supposition is given some credibility by the relatively close agreement for Cleaning Supplies as compared to Toilet Preparations. The major items in Paper Supplies and Food Wraps would likely be bought mainly in supermarkets, with some possibility of purchases elsewhere.

3. There may have been less complete reporting for purchases made by family members other than the one responsible for keeping the diary. The better reporting for food and cleaning supplies might be attributed to the housewife's better knowledge on these areas. The use of one diary per adult member, as in the British diary surveys, might have produced better results for some groups. The same problem arises in the recall survey, although interviewers are instructed to interview individual family members separately if necessary to get the information.

The better performance of the diary with respect to Food at Home was not unexpected. The recall method of estimation on the basis of an average week is an approximation which may be subject to over-statement for several reasons. The respondent, in arriving at an estimate for a typical week is likely to think in terms of current experience, which, in times of rising prices will have an inflationary effect on the average. In January and February 1970, when the 1969 recall survey was under way, price indexes for Food at Home were 2 and 3 percent above the 1969 average. The respondent may think in terms of a major shopping trip rather than average of small and large weekly trips.

Concerning the diary, which also showed some over-estimation for Food at Home in comparison with the national accounts, the absence of records from people away on vacations, which was noted with respect to Board away from Home, doubtless had a reverse effect on Food at Home. The amount by which the diary per capita estimate exceeds the national accounts estimate is about equal to the per capita figure for Board away from Home obtained from the recall survey. If this is assumed to approximate the amount by which Food at Home should be reduced to compensate for the missing non-expenditures of absent spending units, then the diary estimate, on the basis of collected data is even better (or could be even better) than it appears in Table 10. This would tend to corroborate the view that the two diary weeks jointly present a good average of weekly spending on Food at Home.

4. RECENT AND CURRENT DEVELOPMENTS IN EXPENDITURE SURVEYS

Following the 1969-70 program the small organization responsible for the planning, processing and analysis of expenditure surveys withdrew from the field for the remainder of 1970 and all of 1971 in order to contemplate and organize its gathered folk-lore. In 1971, planning began for the 1972 program which was a return to smaller urban surveys. Because the large volume of data from the 1969-70 program was becoming available, it was decided to return to a more experimental data collection program. Early in 1972 a partial budget recall survey of shelter,

house furnishings, appliances and cars was taken with reference to the year 1971. A new feature in this survey was the more detailed questions on financing methods and interest costs. Interest on instalment buying and consumer loans had been poorly reported in earlier surveys, and it was considered that more probing questions might be tested on a survey which did not ask for full budget information. The items covered in the survey comprised the majority of commodities on which financing charges might be significant. This survey was followed by a series of bi-monthly surveys of clothing purchases designed to obtain information on seasonal patterns in buying. These surveys were taken in March, May, July, September, November of 1972 and January, 1973, and referred in each case to expenditures in the previous two months. A different sample of about 1,700 households was used in each survey. This made it impossible to use a "bounding" technique; but it is doubtful how useful this would be for the majority of clothing items. A full-budget recall for 1972 taken early in 1973 collected clothing expenditures for the same period covered by the bi-monthly surveys.

Response for the 1971 survey of shelter and durables and the 1972 clothing survey were 81 and 83 percent respectively, considerably above the customary response rates for recall surveys of the complete budget. This is consistent with the experience with partial budget surveys, in 1953 and 1955. Response for the 1972 full budget survey was 77.5 percent, which suggests that at least part of the higher responses for the two partial budget surveys were due to improved field control.

The collection of information on interest on consumer debts was noticeably improved by the additional questions in 1971. A comparison of results for the eight cities covered in 1971 with the same eight cities in 1969 showed that for families of two or more the percentage reporting had increased from 32.3 percent to 50.9 percent, and that the average per family had increased from \$43 in 1969 to \$85 in 1971. The latter figure is still low in relation to other available information.

References have been made to the balancing check between receipts and disbursements which is used in the field as a flag to cause the schedule to be examined for possible sources of error, and in the final editing to serve as a basis for screening out unacceptable schedules. The lack of such a check on partial budget schedules is one of the disadvantages of this type of survey. In processing 1971 schedules for shelter and durables a crude substitute for the balancing check was devised for identifying schedules which appeared to have excessive expenditures; this was the ratio of total expenditures obtained on the schedule (shelter, furniture and furnishings, household appliances and vehicles) to receipts (net income before tax, other money receipts, less net change in assets and liabilities). In the computer edit a ratio of 60 percent was used to flag schedules for further examination and on this basis about 1 percent of the sample were screened out for not having, on more stringent criteria, adequate residual resources for purchasing items not covered by the survey such as food, clothing and automobile operation. A distribution of this ratio covering the whole sample for 1971 even after this adjustment differed from distributions for the same eight cities derived from the surveys for 1969, 1967 and 1964, in showing about $7\frac{1}{2}$ percent of families with ratios of 50 percent or more compared with 4.1, 3.8 and 4.4 percent of families respectively for these three earlier surveys, where differences appear to be attributable to sampling fluctuations rather than trend effects. The only explanation for the 1971 difference appears to be the

absence of the balance check in the partial budget survey. The 1971 distribution also shows a higher proportion of families at the lower end of the ratio distribution, suggesting that some of them might have been screened out if a full balance check had been possible.

At this stage only a preliminary comparison of data from the clothing survey and the full budget survey for 1972 are available. This shows that on average the expenditure reported on clothing from the clothing survey was nearly 40 percent higher than that for the annual recall. For a more narrowly defined clothing category, the per capita estimate, derived from the whole sample for the 1969 annual recall survey, was very close to the figure derived from the national accounts. In relation to this, estimates for 1969 and 1972 derived from the annual recall survey for the same group of cities covered by the 1972 survey, understates the per capita increase, over that period, by about 8 percent, as compared with that registered by the national accounts for the country as a whole. This would suggest that while there is some evidence to show that the annual recall estimate is low, the figure obtained from the clothing survey is grossly inflated. A comparison at the individual item level may be more revealing.

5. SUMMARY AND CONCLUSIONS

Experience in the 1969 surveys confirmed observations which had been made in the more restricted surveys concerning differences between weeks and the differing results obtained by recall and diary for food expenditures. The greater scope of the survey permitted comparisons with aggregates from retail trade statistics and other sources, thus providing answers, some of them tentative, to questions concerning the relative merits of diary and recall.

As expected the two-week diary provided the more satisfactory estimate for Food at Home, but was deficient in Food away from Home. Both estimates could be improved by obtaining expenditures from the families who are missing from diary results because all members are away on vacations or other trips. It is proposed that in the next diary survey, scheduled for the year 1974, some recall questions will be asked concerning expenditures away from home in the past month. For the other components of Food Away from Home, meals in eating places and between-meal food, it was not clear whether diary results were low or not.

The commonly-held view that the higher first-week expenditures are balanced in the second week to give an approximately "normal" average appears to be justified for Food at Home. There may be some slight under-reporting in the second week in addition to lower purchases, but this appears to be compensated by the abnormally high buying in the first week. The much greater second-week declines for non-food items evidently contain a larger element of under-reporting.

There was a general tendency towards over-estimation on the recall survey for the groups examined, with the exception of food away from home, alcoholic beverages, cigarettes and tobacco and books. The three latter groups were understated by diary as well as recall.

Among non-food groups, best agreement between recall and diary was shown for Cleaning Supplies and Newspapers and Magazines. For Paper Supplies and

Toilet Preparations, where differences between recall and diary were considerable, the recall averages were more consistent with national aggregate data.

Differences between recall and diary were generally shown to be significant when examined across regions. There were marked variations among regions in the amount of difference between estimates obtained by the two methods, suggesting differences in regional attitudes or, possibly regional training and controls. There was also a marked income effect in recall-diary differences. Further exploration of the incidence of differences between the first and second week, according to family characteristics, might shed some light on the differences between methods.

The recall survey of the total budget makes a considerable demand on the respondent in remembering purchases, estimating annual amounts and referring to records. It is small wonder if patience and accuracy deteriorate as the interview progresses. Partial budget surveys appear as a tempting alternative towards winning response and complete co-operation. The venture into this type of survey in 1972 was welcomed by field staff and interviewers and appears to have been well received by respondents. The absence of the balancing check between total receipts and disbursements is an important limitation of this type of survey. There is also the difficulty of co-ordinating results with those from other surveys, and the fact that they are more expensive in relation to the amount of information obtained. On the other hand, the shorter schedule permits more detailed and probing questions and may be used as a vehicle for improving recall estimates. The efficiency of shorter recall periods has yet to be proved in Canadian experience.

Statistics Canada

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APPENDIX I

METHODS AND INFORMATION COLLECTED, 1953-1957 AND 1962

1953

Monthly surveys: a rotating sample of approximately 200 families per month was interviewed to collect information on:

(a) food expenditures for a two-week period by one-week recall and one-week diary for the first five months (response 82 percent), and by diary only for the remainder of the year (response 66 percent).

(b) Homeowner housing costs (mortgage interest, property tax and insurance) for the previous twelve months and all other shelter costs for the previous month; on the same schedule information on family composition and income were collected (response 78 percent).

Quarterly surveys: a rotating sample of about 200 families was interviewed in April, July, October and January (1954) to obtain clothing expenditures for the previous quarter.

Annual recall survey: recall records of income and expenditure and changes in assets and liabilities for the calendar year 1953 were obtained from about 1,000 families in January, 1954 (response 71 percent).

1955

Monthly surveys: a rotating sample of about 180 families per month was interviewed to collect information on:

(a) food expenditure for a two-week period by diary; (response 66 percent).

(b) expenditures on home furnishings and equipment, radios, television and cars for the previous twelve months; on the same schedule information on family composition and income (response 77 percent).

Annual recall survey: recall records as in 1953 from a sample of 300 collected in January, 1956 (response 63 percent).

1957

Monthly surveys: food expenditure for a two-week period by diary from three-month panels averaging about 145 families per month. An average of about 300 families per month submitted diary records. Information was also collected on tenure, education, living conveniences and family income for the previous twelve months (response 67 percent).

Annual recall survey: recall records as in 1953 and 1955 from a sample of 1,100 families in January, 1958 (response 61 percent).

1962

Monthly surveys: a rotating sample of about 150 families was interviewed to collect information on food expenditure for a four-week period (weekly diary), also on family composition and family income for the previous twelve months (response 70 percent).

Annual recall survey: recall records as in 1953-57 obtained from about 1,000 families in January-February, 1963 (response 72 percent).